

5 CLAIMS

1. A method of processing a video including baseball comprising:
 - (a) identifying a plurality of segments of said video based upon an event, wherein said event is characterized by a start time based upon when the ball is put into play and an end time based upon when the ball is considered out of play, where each of said segments includes a plurality of frames of said video; and
 - (b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.
2. The method of claim 1 wherein said event is defined by the rules of baseball.
3. The method of claim 1 wherein said start time is temporally proximate a baseball pitch.
4. The method of claim 1 wherein said end time is temporally proximate to the batter missing the ball with a bat.
5. A method of processing a video including baseball comprising:
 - (a) identifying a plurality of segments of said video, where each of said segments includes a plurality of frames of said video, based upon a series of activities defined by the rules of baseball that could potentially result in at least one of:
 - (i) a score;
 - (ii) preventing a score;
 - (iii) advancing a team toward a score;
 - (iv) preventing advancing a team toward a score; and

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(b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.

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6. The method of claim 5 wherein said summarization of said plurality of segments is in the same temporal order as said plurality of segments within said video.

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7. The method of claim 5 wherein said activities are determined based upon the color characteristics of said video.

8. The method of claim 5 wherein said activities are determined based upon scene changes.

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9. A method of processing a video including baseball comprising:

(a) identifying a plurality of segments of said video based upon detecting a play of said baseball game, wherein said identifying includes detecting the start of said play and detecting the end of said play, where each of said segments includes a plurality of frames of said video; and

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(b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.

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10. The method of claim 9 wherein said detecting the end of said play is based upon detecting said start of said play.

11. The method of claim 9 wherein said summarization identifies said plurality of segments of said video.

- 5 12. The method of claim 9 wherein said summarization is a summarized video comprising said plurality of segments excluding at least a portion of said video other than said plurality of segments.
- 10 13. A method of processing a video including baseball comprising:
(a) identifying a plurality of segments of said video, wherein the start of said plurality of segments is identified based upon detecting at least one region of a generally green color and at least one region of a generally brown color, where each of said segments includes a plurality of frames of said video; and
15 (b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.
- 20 14. The method of claim 13 further comprising detecting at least two regions of said generally green color.
- 25 15. The method of claim 13 further comprising detecting at least two regions of said generally brown color.
- 30 16. The method of claim 15 further comprising detecting at least two regions of said generally green color.
17. The method of claim 13 wherein said green color and said brown color are generally vertically aligned.
18. The method of claim 13 wherein said green color region and said brown color region have sufficient horizontal spatial extent.
19. A method of processing a video including baseball comprising:

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(a) identifying a plurality of segments of said video, wherein the start of said plurality of segments is identified based upon detecting at least three regions of horizontally oriented regions of colors, where each of said segments includes a plurality of frames of said video; and

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(b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.

20. The method of claim 19 wherein at least two of said regions have the same dominant color.

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21. The method of claim 19 wherein at all of said at least three regions have different said colors.

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22. The method of claim 20 wherein said at least two regions are located on opposing sides of another said detected region of a different color.

23. The method of claim 19 wherein said one of said regions is generally brown and another of said regions is generally green.

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24. A method of processing a video including baseball comprising:

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(a) identifying a plurality of segments of said video, wherein the start of said plurality of segments is identified based upon identifying at least three regions of sufficient spatial coherence and sufficient horizontal extent, where each of said segments includes a plurality of frames of said video; and

(b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.

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25. The method of claim 24 wherein each said at least three regions is at least one of substantially generally green and substantially generally brown.

26. The method of claim 24 wherein said three regions are generally vertically spaced apart.

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27. A method of processing a video including baseball comprising:

(a) identifying a plurality of segments of said video, wherein said identifying for at least one of said segments includes detecting the start of said segment based upon processing of a first single frame of said video, where each of said segments includes a plurality of frames of said video;

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(b) verifying that said first single frame is an appropriate start of said segment based upon processing of another single frame temporally relevant to said first single frame; and

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(c) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.

28. The method of claim 27 where in said identifying is based upon detecting at least one region of generally brown and at least one region of generally green.

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29. A method of processing a video including baseball comprising:

(a) identifying a plurality of segments of said baseball video, wherein said identifying for the end of at least one of said segments is based upon detecting a scene change, where each of said segments includes a plurality of frames of said baseball video; and

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(b) creating a summarization of said baseball video by including said plurality of segments, where said summarization includes fewer

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frames than said baseball video.

30. The method of claim 29 wherein said scene change is based upon a histogram.

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31. The method of claim 29 wherein said identifying for the start of at least one of said segments is based upon detecting regions of color.

32. The method of claim 31 wherein at least one of said regions is generally brown and at least one of said regions is generally green.

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33. A method of processing a video including baseball comprising:
(a) identifying a plurality of segments of said baseball video, wherein said identifying for the end of at least one of said segments is based upon detecting a plurality of scene changes, where the first scene change detected after the start of said at least one of said segments is free from being selected as said end of said at least one of said segments, where each of said segments includes a plurality of frames of said baseball video; and
(b) creating a summarization of said baseball video by including said plurality of segments, where said summarization includes fewer frames than said baseball video.

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34. The method of claim 33 wherein at said first scene change the frame is identified as primarily the field.

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35. The method of claim 33 wherein said field is determined based upon detecting at least a generally green region and a generally brown region.

36. A method of processing a video including baseball comprising:

5 (a) identifying a plurality of segments of said video, where each of said segments includes a plurality of frames of said video;

(b) identifying a plurality of segments that are temporally separated by a sufficiently short duration;

(c) based upon said identifying as a result of (b) connecting said

10 identified plurality of segments; and

(d) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.

38. The method of claim 36 wherein said connecting results in a single segment that includes said identified plurality of segments together with the frames of said video between said identified plurality of segments.

40. The method of claim 37 wherein said connecting includes discarding the frames of said video between said identified plurality of segments.

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- 5 41. The method of claim 37 wherein said connecting results in a single segment
 that includes said identified plurality of segments together with the frames
 of said video between said identified plurality of segments.
- 10 42. A method of processing a video including baseball comprising:
 (a) identifying a plurality of segments of said video, wherein said
 identifying for at least one of said segments includes detecting the
 start of said segment based, at least in part, upon processing of a
 frame of said video, where each of said segments includes a plurality
15 of frames of said video, wherein said processing characterizes
 whether a batter is sufficiently close to at least one of a catcher and
 an umpire proximate home base; and
 (b) creating a summarization of said video by including said plurality of
 segments, where said summarization includes fewer frames than said
 video.
- 20 43. The method of claim 42 wherein said start is further detected based on at
 least one region of a generally green color and a generally brown color.
- 25 44. A method of processing a video including baseball comprising:
 (a) identifying a plurality of segments of said video wherein each of
 said segments includes a play of baseball;
 (b) detecting a commercial within said video;
 (c) creating a summarization of said video by including said plurality of
 segments, where said summarization includes fewer frames than said
30 video, where said plurality of segments of said video sufficiently
 temporally close to said commercial are free from being included
 within said summarization.
45. The method of claim 44 wherein said commercial is detected based upon at

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least one substantially black frame.

46. A method of processing a video including baseball comprising:

- (a) identifying a plurality of segments of said video wherein each of said segments includes a play of baseball, wherein said segments include full-speed plays and slow motion plays of said full-speed plays; and
- (b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video, where a user may select from:
 - (i) said summarization including only full-speed plays;
 - (ii) said summarization including only slow motion plays;
 - (iii) said summarization including both full-speed plays and slow motion plays.

47. A method of processing a video including baseball comprising:

- (a) identifying a plurality of segments of said video wherein each of said segments includes a play of baseball;
- (b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video; and
- (c) removing at least one of said segments from said summary based, at least in part, upon audio information related to said at least one of said segments.

48. The method of claim 47 wherein said audio information is obtained exclusively from a temporal analysis.

49. A method of processing a video including baseball comprising:

- (a) identifying a plurality of segments of said video wherein each of

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said segments includes a play of baseball;

(b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video; and

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(c) modifying the duration of at least one of said segments from said summary based, at least in part, upon audio information related to said at least one of said segments.

50. The method of claim 49 wherein said audio information is obtained exclusively from a temporal analysis.

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51. A method of processing a video including baseball comprising:

(a) identifying a plurality of segments of said video, wherein the start of said plurality of segments is identified based upon detecting different textures, where each of said segments includes a plurality of frames of said video; and

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(b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.

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52. A method of processing a video including baseball comprising:

(a) identifying a plurality of segments of said video, wherein the start of said plurality of segments is identified based upon said video being free from substantial translational motion, where each of said segments includes a plurality of frames of said video; and

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(b) creating a summarization of said video by including said plurality of segments, where said summarization includes fewer frames than said video.

53. A method of processing a video including baseball comprising:

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- (a) identifying a plurality of segments of said baseball video, wherein said identifying for the end of at least one of said segments is based upon detecting a scene change, where said scene change is not used to identify said end of said at least one of said segments if the temporally relevant portion of said at least one said segment includes substantial horizontal motion, where each of said segments includes a plurality of frames of said baseball video; and
- (b) creating a summarization of said baseball video by including said plurality of segments, where said summarization includes fewer frames than said baseball video.

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54. A method of processing a video comprising:
- (a) providing a description of said video
 - (a) identifying a plurality of segments of said video based upon said description;
 - (b) generating another video based upon said identified segments, wherein said another video has less frames than said video.

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55. The method of claim 54 wherein said video is transcoded in accordance with the channel capacity of a transmission medium.

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56. The method of claim 54 wherein said video is transcoded in accordance with the storage capacity of a storage device.

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57. The method of claim 54 wherein said description is compliant with MPEG-7 standard.

58. The method of claim 54 wherein said description is compliant with TV-Anytime standard.

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59. A method of providing video comprising:
- (a) a service provider identifying a summary of a video;
 - (b) a service provider identifying a description of said summary; and
 - (c) said service provider providing said summary and said description to a remote user in response to receiving a request from said remote user.

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60. The method of claim 59 wherein said user requests said summary with a browser.

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61. A method of providing video comprising:
- (a) a service provider storing a summary of a video; and
 - (b) said service provider providing said summary to a remote user in response to receiving a request from said remote user.

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62. The method of claim 61 wherein said user requests said summary with a browser.

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63. A method of providing video comprising:
- (a) a service provider storing a description of a summary of a video; and
 - (c) said service provider providing said description to a remote user in response to receiving a request from said remote user.

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64. The method of claim 63 wherein said user requests said description with a browser.